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DIGEST

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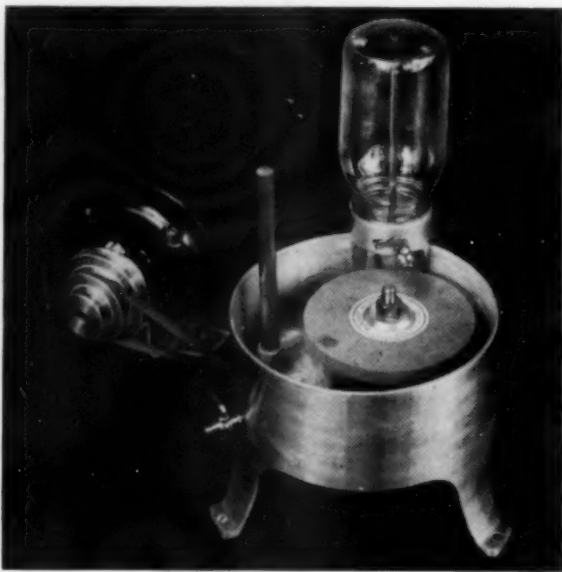
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INTRODUCING THE EARTH SCIENCES - 1948

In an effort to keep our readers abreast of the latest developments in the geological sciences, we are pleased to present this department as a new monthly feature of **The Earth Science Digest**. The first installment begins on page 10.

COVER PHOTO

This month's cover photo is a view of the mud cracks in the 1947 flood deposit of the Missouri River, near Jefferson City, Missouri. Photo by Prof. W. D. Keller, University of Missouri.

EASTERN FEDERATION TO BE FORMED

We are pleased to announce plans for the formation of an eastern federation of mineralogical and geological societies. Letters have been sent to a number of eastern earth science societies and the following organizations, through their officers or the membership as a whole, have signified their interest in the proposed federation: The Georgia Mineral Society, the Connecticut Valley Mineral Club, the Boston Mineral Club, The Oxford County (Me.) Mineral and Gem Association, the Queens (N. Y.) Mineral Society, the Newark Mineralogical Society, the District of Columbia Mineralogical Society, and the New York Mineralogical Club.

A meeting will be held in the fall, attended by representatives and members of the various organizations, to officially form a regional federation, to draw up a constitution, and to make plans for a convention in the summer of 1949. A questionnaire will be sent to all the eastern societies this month in order to determine the date and place of the meeting.

DIGGING FOR DINOSAURS

HORACE G. RICHARDS

Academy of Natural Sciences of Philadelphia

Dinosaurs are probably the best publicized of all fossils. They have appeared in the movies, the comic strips, advertisements, and even on television. The layman who knows nothing about geology or fossils in general, is aware of the fact that these immense creatures lived on the earth many millions of years ago.

One of my main duties as a curator in a museum is to identify specimens brought in by amateur collectors. Many times hopeful individuals have brought in specimens, or have reported finds, that they thought were dinosaurs or some other large prehistoric animals. Unfortunately, most of these people were mistaken. If I were to add together the miles that I have travelled on "wild goose chases" to track down these rumors, I would have enough miles for an extensive expedition. A few years ago, I journeyed to Ocean City, Maryland, to examine a prehistoric monster only to find a skeleton of a whale that had been washed ashore only a few years previously. Another "strange fossil" from southern New Jersey turned out to be a cat of very recent vintage, while some dinosaur eggs proved to be some ordinary concretions. My file now contains reports of several other such finds that I will investigate as soon as opportunity permits.

Fortunately, not all such reports are false, and very often one good find makes up for a great many false leads. Several of our most important specimens in the Academy were brought in by amateurs,

Dr. Horace G. Richards, Associate Curator of Geology and Paleontology of the Academy of Natural Sciences of Philadelphia, here tells us of the now-famous find of the Duck Bill dinosaur in New Jersey in the summer of 1947.

Dr. Richards, a nationally-known scientist and lecturer received the President's Award of the American Association of Petroleum Geologists in 1945 for his article on the Structure and Stratigraphy of the Coastal Plain between New Jersey and Georgia. His work in paleontology is highlighted by his studies on the marine Pleistocene mollusks. Dr. Richards is a member of the Editorial Board of **The Earth Science Digest**.

or came from localities reported by amateur collectors.

Dinosaurs are generally associated with the geological formations of western United States, the best specimens having come from South Dakota, Wyoming, and Alberta. A new find in those regions is not very startling, and rarely receives much publicity.

However, it has been known for a long time that dinosaurs also lived in eastern United States. In fact, the first dinosaur skeleton found in America came from a marl pit at Haddonfield, New Jersey, in 1858, and is now preserved in the Academy of Natural Sciences of Philadelphia.

The Mesozoic Era or the "Age of Reptiles", during which time the dinosaurs flourished, lasted for about 100,000,000 years. It is divided into three major periods,

the Triassic, Jurassic and Cretaceous. Rocks of all three major periods are present in western North America, while only those of the Triassic and Cretaceous are known from the eastern part of the continent. Furthermore, many of the Mesozoic rocks of the west were deposited on land or in fresh-water, while a greater percentage of those from the east were formed in an ancient ocean. This fact also helps explain the relative scarcity of dinosaur fossils in eastern rocks, for these creatures lived on land rather than in the ocean.

Triassic rocks of the Connecticut Valley and near Gwynedd, Pennsylvania, frequently contain dinosaur footprints, and a few skeletons of small dinosaurs have been found. The most complete skeleton was found near New Haven, Connecticut, and goes by the appropriate name of *Yaleosaurus*. It measured about 6 feet in length.

Recently, the skeletons of some very unusual small dinosaurs were found by an expedition from the American Museum of Natural History in New Mexico. These are thought to have been very primitive examples of the dinosaur tribe.

The Jurassic rocks, especially those of the Morrison formation, of Colorado, Wyoming, Utah and Montana, have yielded some of America's greatest dinosaurs, some up to 70 feet in length; these skeletons have been distributed to museums throughout the country.

While perhaps not quite as large as their Jurassic ancestors, some of the dinosaurs of the Cretaceous age reached an enormous size. Important Cretaceous dinosaurs have been found in South Dakota, Montana and Alberta.

Cretaceous formations similar in age to those of the west occur

along the Atlantic and Gulf Coastal Plain from New Jersey to Texas. However, most of these formations are of marine origin and contain the remains of marine fossils such as mollusks, sharks, corals and the like. Therefore it is not too surprising that dinosaur fossils are scarce or practically absent.

Certain types of dinosaurs, especially the Duck Bills, lived in marshes or swamps near the seashore, and it is quite possible that their skeletons could have been carried down to the sea by streams and rivers. The Duck Bill from Haddonfield, New Jersey, was probably about 30 to 40 feet long and 18 feet high. The skeleton was almost complete, except for the head, and it is believed that it lived in marshy ground near the shore of the ancient Cretaceous sea.

Since 1858, very few examples of dinosaurs have been found in the Cretaceous formations of the Atlantic Seaboard. A few partial skeletons found at Bladensburg and Muirkirk, Maryland (near Washington, D. C.), together with a few fragments from several localities in New Jersey and North Carolina, practically complete the list of eastern Cretaceous dinosaurs.

It has always been our hope that another skeleton would be found in New Jersey, and with this thought in view, we have tried to keep track of all pits, excavations and other operations in the Cretaceous belt of the State. We have also encouraged the operators of such pits, as well as other interested individuals, to report all unusual finds to us at the Academy.

While, until very recently, no dinosaurs had been found, this method was paying some worth-



Figure 1. Dr. Horace G. Richards and Mr. William Bock removing a dinosaur femur at Sewell, New Jersey.

while dividends, for we had obtained the skeletons of several large crocodiles, a mosasaur, a very rare fossil turtle, as well as

countless small but highly interesting invertebrate fossils.

One of the most productive areas was the pit of a water treatment



Figure 2. Strengthening the femur with plaster and burlap.

plant near Sewell in Gloucester County, only about 10 miles from Philadelphia. One day, a few months ago, I was called to Sewell to pick up the skeleton of a large sea turtle that had recently been uncovered from the pit; the workmen were particularly interested in the discovery and promised to keep on the lookout for further finds. One of the boys remarked to me, "Wouldn't it be fine if we discovered a dinosaur?" I told him that it was entirely possible, for the lower part of the pit was in the Cretaceous formation, very similar to that in which the original Duck Bill had been found some 90 years before.

It wasn't long after this conversation that I received a telephone

call from Sewell telling me that the boys had found something, and that it looked big. I immediately dropped other work and rushed down to Sewell. This time they had hit the "jackpot"; it was definitely a leg bone of a dinosaur. (Figure 1)

We removed the bone with great care, and cautioned the workers to be on the lookout for the rest of the animal. A few days later I was notified that they had found another large bone. This was a little softer than the first and required more care in removing from the ground. We strengthened it with plaster and attached it to a board with plaster and burlap, somewhat in the manner of the treatment of a broken human leg. (Figure 2)



Figure 3. Dr. Richards and Dr. Jack Graham removing a femur from the plaster in the laboratory of the Academy of Natural Sciences of Philadelphia.

Thus, it was excavated and transported to the Academy for study.

We could see that more of the skeleton was still in the ground, and that considerably more time would be required for removal. Therefore we arranged for some of our staff to remain at Sewell to continue excavating, while we called for the advice of our consultant, Dr. E. H. Colbert, of the American Museum of Natural History in New York.

More of the animal was uncovered during the next few days; in all some 275 bones or fragments were found, including the two large femurs, some smaller leg bones, vertebrae, ribs and many miscellaneous fragments. Unfortunately, no pieces of the head were found.

The material was boxed and removed to the Academy for study; in fact the real work was just beginning. First, the large bones had to be removed from the plaster (figure 3) and then strengthened with numerous coats of shellac; also the larger hollow bones were filled with plaster and metal rods in order to give them additional strength.

Then began the work of assembling the skeleton. Unfortunately, the material was not complete enough for a full restoration, but enough of the "jigsaw" was fitted together to definitely determine that the skeleton was that of a Duck Bill Dinosaur, somewhat smaller than the Haddonfield specimen, but nevertheless a real giant. Estimates place its dimensions as



Figure 4 Model of the Duck Bill (*Hadrosaurus*) as found at Sewell, New Jersey.

25 to 30 feet in length and 10 to 15 feet in height. A detailed description of the skeleton has been prepared by Dr. Colbert and will soon be published by the Academy of Natural Sciences. He has identified it as *Hadrosaurus minor*, of the

same genus but a different species from the original Haddonfield discovery of 1858 (*H. foulkii*). It is generally believed, although not certain, that the Eastern Duck Bill (*Hadrosaurus*) is very closely related to, or is identical with the



A full-size reproduction of the Western Duck Bill Dinosaur.

Western Duck Bill (*Trachodon*).

Too much credit can not be given to the owner of the pit, Churchill Hungerford, Jr., and the foreman, Stephen Straga, and the two boys who worked in the pit, Charles Miranda and Raymond Ferrara. Without their valuable assistance and cooperation, we would not have been able to excavate this specimen.

This discovery has inspired a more intensive search for dinosaurs and other large fossils in eastern United States. The publicity given to the find has already brought us reports of various similar discoveries in New Jersey and nearby states. Although none of these reports have proved as exciting as the Sewell Dinosaur, the records of several interesting fossils have thus been obtained. Who knows but that the next report may be of a dinosaur bigger and better than those from Haddonfield and Sewell?

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The Earth Sciences — 1948

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GIANT EXPLOSIONS ON SUN MAY START COSMIC RAYS

PASADENA, CALIF., June 23 — Giant explosions associated with sunspots on the suns of the universe may be giving birth to the powerful cosmic rays which bombard our earth from outer space.

A natural atom-smasher, a kind of magnetic accelerator, is operating in the neighborhood of sunspots, Dr. Manuel Sandoval Vallarta of Mexico City suggested at a symposium on cosmic rays at the California Institute of Technology here. Such an accelerator mechanism on our own sun may be producing a part of the cosmic radiation on the earth. Acceleration near sunspots on other stars might account for the rest of the cosmic rays, Dr. Vallarta pointed out.

This proposed solution for the mystery of the origin of the potent rays was presented to the National Academy of Sciences last year by Scott E. Forbush of the Carnegie Institution of Washington. He reported that Carnegie Institution records showed an increase in cosmic radiation at times of particularly high activity on the sun. Dr. Vallarta has been working with Carnegie Institution scientists on a theory to explain how the suns of the universe could manufacture cosmic rays.

A new, yet-to-be-discovered cosmic ray particle was forecast at the symposium by a famous French scientist, Dr. Pierre Auger. Dr. Auger described the particle as a lightweight meson. It will have a weight of only three to ten times that of an electron, the tiny, negatively charged bit of atoms.

Known types of mesons, first found in cosmic rays and recently produced artificially for the first time at the University of California, have been assigned measured or estimated weights ranging from 200 to 900 times that of the electron.

The symposium here, bringing together outstanding scientists from many countries, is being held in honor of 80-year old Dr. Robert Andrews Millikan, retired head of Cal Tech and a pioneer in the study of cosmic rays.

SUPPOSEDLY EXTINCT GEYSER ERUPTS IN YELLOWSTONE PARK

YELLOWSTONE PARK, Wyo., June 25 — Iron Spring, a supposedly extinct geyser between the Norris Geyser Basin and Madison Junction in Yellowstone National Park, suddenly burst into full eruption, spouting forth so much hot water that overlying soil in the vicinity was washed away, exposing the stony geysere formation underneath.

Exact time of the eruption is not known, since no witnesses were in the neighborhood at the time, and the evidence written large on the landscape has only now been discovered. Rangers who visited the spot early this month, however, reported things as they had been for years. The outbreak therefore must have taken place some time within the past three weeks or so.

No previous eruption of Iron Spring had ever occurred within human memory or record.

ANCIENT ESKIMO RUINS TO BE STUDIED BY SMITHSONIAN SCIENTIST

WASHINGTON, June 26 — Ruins of ancient Eskimo houses, built of stone with whalebone rafters, will be studied on the Parry and Sverdrup island groups, west of Greenland, by Dr. Henry B. Collins, Jr., of the Smithsonian Institution this summer. These sites, which are believed to represent stations on the Eskimos' migration route from the North American mainland to Greenland, have long been known but have never been scientifically excavated.

The expedition is sponsored jointly by the U. S. National Museum and the National Museum of Canada. The latter institution will be represented by Colin Thacker, who will accompany Dr. Collins. The men will make their headquarters at a Canadian-U. S. meteorological station which has recently been set up on Cornwallis island.

THERE'S LOTS OF POISONOUS GAS IN THE EARTH'S ATMOSPHERE

PASADENA, Calif., June 28 — There's lots of the poisonous gas methane in the earth's atmosphere. At least there is enough to register its presence upon light from the sun as it passes through our atmosphere on its way to the earth's surface.

A new system of molecular bands in the spectrum of the earth's atmosphere has been identified as belonging to methane, poisonous "marsh gas," by astronomers of the University of Michigan. These bands were reported here this afternoon to the joint meeting of the American Astronomical Society and the Astronomical Society of the Pacific.

The new all-reflecting infrared spectrometer of the University's McMath-Hulbert Observatory was used for the study. This apparatus employs a Cashman lead-sulfide cell, a hundred times more sensitive than the best thermocouple previously used.

Dr. Robert R. McMath, Dr. Orren C. Mohler and Dr. Leo Goldberg stated that they now have completely mapped with this instrument the solar spectrum in the region 8,000 Angstroms, practically infrared and invisible to the naked eye, to 25,000 Angstroms.

The new solar map shows not only a wealth of solar atomic lines of such elements as hydrogen, iron, magnesium, sodium, silicon, carbon, aluminum, calcium and others, but also numerous well-resolved molecular bands originating in the earth's atmosphere.

Most of these "telluric" band systems come from carbon dioxide and water vapor, as expected. The four new methane bands are at wavelengths 16,600, 22,000, 23,300 and 23,800 Angstroms.

In the absence of adequate laboratory spectra for comparison, the absorption bands appearing in the sun's spectrum were identified conclusively as arising from methane by inserting in the path of the sunlight an absorption cell containing methane at atmospheric pressure. When this was done, the absorption lines identified as due to methane were enormously accentuated, while the remainder of the spectrum was unchanged.

Bright Meteors Are Debris Of Comets

When you see a "falling star" flash across the sky, you are really looking at a bit of a comet crashing into the earth's atmosphere.

All or nearly all of the bright "falling stars" or meteors you spot are debris of comets, Dr. Fred L. Whipple of Har-

vard College Observatory this afternoon told members of the societies.

A determination of the orbits of 45 meteors, photographed at Harvard's stations, showed that 28 belonged to one of seven meteor showers, nine were sporadic and eight more were uncertainly associated with showers of falling stars.

The meteors were photographed with small, wide-field cameras at two stations about 25 miles apart. As they were "caught" photographically at both stations, their height could be calculated. A rotating shutter or fan attached to the cameras chopped the meteor's trail into short lengths so that their velocity could be determined and their orbits in space computed.

For several reasons Dr. Whipple classes bright meteors as debris from comets rather than as bits of minor planets or associated with meteorites, chunks of matter large enough to survive the fiery ordeal of friction as they rush through our atmosphere. He stated:

In many cases the meteors are obviously associated with comets.

Sporadic meteors, shower meteors and short-period comets have similar orbits.

Meteorite falls suggest little or no association with showers of "shooting stars."

Tiny minor planets were probably lost from our solar system in ages long past.

SINAI PENINSULA INHABITED SINCE NEANDERTAL TIMES

WASHINGTON, JULY 1 — The Sinai peninsula, through which the Children of Israel passed during their long wanderings in search of the Promised Land, served as a land bridge between Africa and Asia long before their time, new evidence discloses. Wendell Phillips, leader of the University of California African Expedition, tells in the new issue of *Science* of recent discoveries of stone implements showing that the region has been inhabited successively by Neanderthal and Cro-Magnon men of the Old Stone Age, tribes of Neolithic or New Stone Age date, and a people of the transition period between the Neolithic and the beginning of the Age of Metals.

Egyptians were in Sinai from the earliest development of their civilization in the valley of the Nile, the expedition's archaeologists found. The great attraction for them was the turquoise mines of the region, which were worked by slave labor under Egyptian overseers.

Beginnings of the Semitic alphabet, which eventually developed into the beau-

tiful characters of Hebrew script, date from these turquoise-mining days. Most of the letterings found on the rocks are fragments of tomb inscriptions, commemorating captive Semitic tribesmen who died under the harsh working conditions of the mines.

The expedition has also worked in Egypt, especially in the desert west of the Nile. Fossil remains of primitive whales and other aquatic animals found there show that this part of Africa was sea bottom in the pre-human millenia of the earlier Age of Mammals. Here also were found stone implements indicating long human occupation through the Old and New Stone ages.

CORRECTION

The Hiawatha Rock and Mineral Shop, operated by Werner J. Vietzke, is located in **Rapid River**, Michigan—not in Rapid City, Michigan, as was stated in their advertisement appearing in the June, 1948, issue of The Earth Science Digest.

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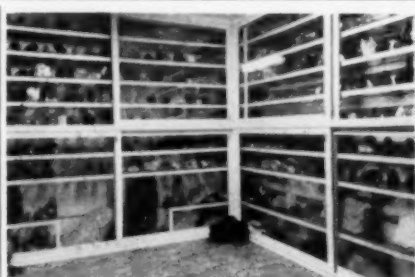
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DENVER CONVENTION A HUGE SUCCESS



The main exhibit hall at the Shirley-Savoy Hotel.

—W. R. Bailey

The first national convention of the American Federation of Mineralogical Societies, held in Denver, Colorado, from June 13th to June 16th, was an excellent example of what can be brought about by a few energetic earth scientists with the cooperation of hundreds of amateur and professional mineralogists, geologists, and lapidists. Not enough credit can be given to the indefatigable convention chairman, Professor Richard M. Pearl, who so ably handled all the myriad details that go into making up a convention.

It would indeed take the entire issue of *The Earth Science Digest* to present to our readers a complete coverage of all the convention events. Instead we will list

the more important events on the program, the convention exhibit awards, and a brief summary of the field trips which took place on June 17th.

The 1949 convention of the American Federation will be held at Sacramento, California, with Jack G. Streeter as convention chairman. After reading the program of the Denver convention, we feel certain that no reader will want to miss the California gathering. Plans for this event will be represented in future issues of *The Earth Science Digest*.

General Meeting

Monday, June 14, 7:30 P.M.

Chairman — Richard M. Pearl



The exhibit of the Canon City Geology Club, Canon City, Colorado. —W. R. Bailey

Program

Welcome.

Introductions and Announcements.

"Welcome to Collectors' Paradise" — Dr. Ben H. Parker, President, Colorado School of Mines, Golden, Colorado.

"Colorado Perlite" — Hon. Fred Jones, Colorado State Commissioner of Mines, Denver, Colorado.

"Glimpses and History of the Colorado Rockies" — Illustrated; presented by Division of Geology, Alger R. Syme, Chairman. Dr. Philip G. Worcester, Professor of Geology, University of Colorado, Boulder, Colorado.

"The Second Stone Age" — Lelande Quick, Editor of The Lapidary Journal, Hollywood, California.

"Meteorites in Relation to Mineral and Rock Collecting" — Dr.

Harvey H. Nininger, Director of American Meteorite Museum, Winslow, Arizona.

Division of Dealers and Publications

Chairman — Robert O. Deidrick, Oakland, California (East Bay Mineral Society).

Wednesday, June 16, 2:00 to 4:30 P.M.

"The Value of Mineral Journals" — Dr. Henry C. Dake, Editor of The Mineralogist Magazine, Portland, Oregon. (Oregon Agate and Mineral Society.)

"What Constitutes a Good Ad" — Lelande Quick, Editor of The Lapidary Journal, Hollywood, California.

Division of Gems and Lapidary

Chairman — Lloyd L. Roberson, Seattle, Washington. (Gem Collectors Club)

Monday, June 14, 2:00 P.M.
to 4:30 P.M.

"Northwest Gem Trails" — Dr. Henry C. Dake, Editor of The Mineralogist Magazine, Portland, Oregon. (Oregon Agate and Mineral Society)

"Facets Polished Quickly" —

"Wet Belt Sanding" — Daniel L. Flaherty, Lapidary Instructor at Royal George Art and Vocational School, Canon City, Colorado (Canon City Geology Club)

"Vertical Sanding" — Earl M. Van Deventer, Lapidary, Caldwell, Idaho (Owyhee Gem and Mineral Society)

"Orienting, Shaping, Mounting, and Faceting Semi-Precious Stones" — Burr N. Porter, Lapidary, Oakland, California (East Bay Mineral Society)

"20,000 Mile Rock Trip Through Central and South America" — Don Major, Mineralogist, Tenino, Washington. (Tenino Rock Cruisers)

Tuesday, June 15, 9:30 A.M.
to 12:00 M.

"Making Cabochon Mountings" — Mrs. Lloyd L. Roberson, Jewelry Instructor, Seattle, Washington. (Gem Collectors Club)

"Gems of San Diego County, California" — Mrs. Dorothy Craig, Los Angeles, California. (Southwest Mineralogists)

"Contour Polishing of Specimens" — Mrs. C. Arthur Foss, Lapidary, Seattle, Washington. (Gem Collectors Club)

"Polishing Facet-Cut Gems" — Guy B. Ellermeier, Lapidary, Denver, Colorado. (Colorado Mineral Society)

Division of Geology

Chairman — Alger R. Syme, Minneapolis, Minnesota. (Geological Society of Minnesota)



T. H. Klecman (Colorado Mineral Society) and his Xylophone made with bars of agatized wood.

—W. R. Bailey

Tuesday, June 15, 9:30 A.M.
to 12:00 M.

"Society Bulletins and Geologic Literature: Their Functions and Value" — Paul VanderEike, Editor of Mineral Notes and News, Bakersfield, California. (Kern County Mineral Society)

Discussion — "The Importance of a Fundamental Knowledge of Geology". "Geology in the Programs of Societies". "Geology as a Cultural Subject; Means of Sponsoring and Promoting it."

Wednesday, June 16, 2:00 P.M.
to 4:30 P.M.

"The Mesabi Iron Range of Minnesota" — Mrs. Loretta E. Koppen, Minneapolis, Minnesota. (Geological Society of Minnesota)

"Geology in Archaeology" — H. Marie Wormington, Curator of Archaeology, Colorado Museum of Natural History, Denver, Colorado (Colorado Mineral Society)

"Western Mineral Resources" — Dr. C. E. Dobbin, United States Geological Survey, Denver, Colorado. (Colorado Mineral Society)

"Cripple Creek Gold Deposits" — Fred Jones, Colorado State Commissioner of Mines, Denver, Colorado. (Colorado Mineral Society)

Division of Mineralogy

Chairman — Arthur L. Flagg, Phoenix, Arizona. (Mineralogical Society of Arizona)

Monday, June 14, 2:00 P.M.
to 4:30 P.M.

"Mineralogy for Juniors" — Dr. Olivia McHugh, Salt Lake City, Utah. (Mineralogical Society of Utah)

"Junior Rockhounds" — John Butcher, Prescott, Arizona. (Junior Rockhounds of Prescott)

Mineral Identification —

"Simple Laboratory Tests" — Dr. Lawrence A. Warner, Assistant Professor of Geology, University of Colorado, Boulder, Colorado.

"Simple Field Tests"—Dr. Ernest E. Wahlstrom, Associate Professor of Geology, University of Colorado, Boulder, Colorado.

Roundtable Discussion—"Mineral Exchanges" — Chairman, J. E. Byron, Boulder, Colorado (Colorado Mineral Society).

Wednesday, June 16
9:00 A.M. to 12:00 M.

"Micro Mounts"—J. E. Byron, Mining Engineer, Boulder, Colorado (Colorado Mineral Society).

"Minerals and the Public" — Harvey C. Markman, Curator of Geology, Colorado Museum of Natural History, Denver, Colorado (Colorado Mineral Society).

"Be Kind to Your Mineral Specimens"—Mrs. Mary A. Piper, Colorado State Bureau of Mines Museum, Denver, Colorado (Colorado Mineral Society).

Roundtable Discussion — "Specialized Collections."

Division of Paleontology

Chairman—James O. Montague, Milwaukee, Wisconsin (Wisconsin Geological Society).

Wednesday, June 16
9:30 A.M. to 12:00M.

Program Chairman—Dr. John R. Ball, University of Kansas City, Kansas City, Missouri.

"The John Day Country, Oregon's Lost World"—A. W. Hancock, Portland, Oregon (Geological Society of the Oregon Country).

"Recent Activity in the Garden Park Fossil Beds"—Frank C. Kessler, Canon City, Colorado (Canon City Geology Club).

Buffalo Barbecue

Tuesday, June 15, 6:00 P.M.

The Pueblo at Red Rocks Park
Menu—Barbecued buffalo, bread and butter, pork and beans, salad, pickles, coffee, cookies, ice cream.

Program — "Foothills Geology"—Dr. John W. Vanderwilt, Geologist, Climax Molybdenum Company, Denver, Colorado.

FIELD TRIPS

Four conducted field trips left Denver at 8:45 A.M., Thursday, June 17. They went in different directions and terminated beyond the borders of Colorado.

A brief synopsis of the highlights of each trip follows:

SOUTHWEST FIELD TRIP

Foothills, Bailey, Kenosha Pass, South Park, Fairplay, collecting near Salida, San Luis Valley, collecting at Wolf Creek Pass, Gem Village Rock Show, tour of Mesa Verde National Park.

WEST FIELD TRIP

Denver Mountain Parks, Blackhawk, Central City, Virginia Canyon road, Idaho Springs, Georgetown, Loveland Pass, Climax,



The Buffalo Barbecue at Red Rocks Park.

—W. R. Bailey

Leadville, alternate route to Aspen or Eagle, Glenwood Springs, visit to vanadium plant, tour of government oil shale plant, burning spring at Debeque, Grand Junction, chuck wagon dinner and pageant, dinosaur tracks in Thomas Coal Mine, collecting in western Colorado localities.

NORTH FIELD TRIP

Fort Collins, collecting at marcasite locality, visit to Lindenmeier Site of Folsom Man, Cheyenne, Laramie, Wyoming jade fields, Sweetwater agate fields, Eden Valley.

NORTHEAST FIELD TRIP

Fort Morgan, collecting at blue barite locality, Sterling, church supper and music, open house at Sterling Museum, collecting in Nebraska petrified wood fields, alternate collecting trips to McCook or Crawford, Omaha, entertainment and collecting.

CONVENTION EXHIBIT AWARDS

1. Minerals (General)
Junior Mineral Exchange
2. Crystals
A. N. Goddard (Michigan Mineralogical Society)
3. Polished Slabs and Flats
J. L. Renton (Oregon Agate and Mineral Society)
4. Cabochons
R. W. Carpenter (East Bay Mineral Society)
5. Faceted Stones
Burr N. Porter (East Bay Mineral Society)
6. Novelties
Lee M. Unruh (Willamette Gem Cutters); T. H. Kleeman (Colorado Mineral Society)
7. Minerals from exhibitor's state
Grand Junction Mineralogical Society; Mineralogical Society of Southern California (Tie)

8. Minerals from one locality
Jack G. Streeter (Southwest Mineralogists); Guy B. Ellermeier (Colorado Mineral Society)
9. Jewelry Craft
Mrs. Lloyd L. Roberson (Gem Collectors Club)
10. Rare Minerals
Mrs. Dorothy Craig (Southwest Mineralogists)
11. Spheres
Wisconsin Geological Society
12. Thumbnail and Micromounts
Arthur L. Flagg (Mineralogical Society of Arizona)
13. Polished Woods
Cheyenne Geology Club; Earl M. Van Deventer (Owyhee Gem and Mineral Society); (Tie).
14. Junior Minerals
Junior Rockhounds of Prescott
15. Fossils
A. W. Hancock (Oregon Agate and Mineral Society)
16. Educational
Pioneer Lapidary School, Loveland, Colorado

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MINERAL DEALERS ASSOCIATION FORMED AT DENVER CONVENTION

The Editor,
Earth Science Digest

Dear Sir:

This is a preliminary report of the first meeting of the committee formed to draft plans for the organization of a mineral dealers' association.

This meeting was held in Denver, June 15, 1948 and was attended by all the members of the committee. The committee elected as its chairman, Dr. D. L. Gamble of Wards Natural Science Establishment, Rochester, New York. In addition to Dr. Gamble the committee is composed of the following people:

Mr. V. D. Hill, of V. D. Hill Minerals, Salem, Oregon.

Mr. L. R. Gordon, of Gordon's Gem & Mineral Supply Co., 1850 E. Pacific Coast Highway, Long Beach 4, Calif.

Mr. C. K. Worthen, of the Michigan Lapidary and Research Co., Birmingham, Michigan.

Mr. Fain White King, of Fain White King Minerals, Cairo, Illinois.

Mr. Raymond Schortmann, of Schortmann's Minerals, 6 McKinley Ave, Easthampton, Massachusetts.

Mr. Thomas S. Warren, of Ultra-Violet Products, Inc., 5205 Santa Monica Blvd., Los Angeles 27, Calif.

The committee tentatively adopted the name, "National Association of Mineral Dealers" and tentatively formulated the main objects of the organization, as follows:

1. To raise the ethical and professional standards of the trade.
2. To educate the collectors

to the difference between good and poor specimens by every possible publicity medium.

These objects were discussed in considerable detail by the Committee with many suggestions from members as to the details. However, the final formulation of the details under each main heading will be worked out by the committee during the coming year.

The committee is seeking the cooperation of the Federal Trade Commission in the formulation of rules, and also invites and requests suggestions from dealers throughout the country concerning the formation of the association. These ideas and suggestions should be forwarded to the Committee Chairman, Dr. D. L. Gamble at Wards Natural Science Establishment, Rochester, New York. Also if possible, the dealers in various parts of the country should contact the members of the committee who happen to be well distributed geographically across the country.

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SUPERIOR MINERALS

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THE COLLECTOR

This section of the Earth Science Digest is devoted to the collector of minerals, fossils, and rocks. Notes on collecting, collections, localities, etc., will be welcomed. Please address all correspondence to The Collector, c/o The Earth Science Digest, Revere, Mass.

BE KIND TO YOUR MINERAL SPECIMENS

MRS. MARY PIPER

Colorado Bureau of Mines

I hope I can give you hints, suggestions and ideas for making your collection one you can be justly proud to show your friends.

Do not collect in quantity but in accordance with your capacity for space and time to properly catalogue, keep attractive and show your specimens to advantage. It is not the object of a hobbyist to have his collection become a burden. That is what quantity does, and in a short space of time the collector is literally snowed under with material. Constantly weed out the lesser specimens; trade, sell, or, if worthy, present them to a museum or a new collector.

The first rule for any attractive collection is cleanliness. Dust, grime and smoke grease have no place in the well ordered collection.

In caring for the many specimens at the Colorado Bureau of Mines Mineral Collection, where they are housed in glass cases — and be assured no glass case is dustproof and smoke grease proof —, we find that a cleaning every five years of each specimen is adequate. However, take into consideration that these cases are not opened, or, if opened, they are not left open any length of time, nor are the specimens handled to acquire oil or acids from the hands;

so the individual collector must use his own judgement in regard to how often they should be cleaned.

A new specimen is always given a bath, as it is sure to have fine particles of dust hiding its veins or markings. White heavy enamel is applied with an artist's brush in a band $\frac{3}{8}$ " wide and long enough to accommodate the number of figures necessary for identification; when dry, the specimen is numbered with India ink and it is then lacquered over. A record is made, and from then on it is an easy task to give all the data on that particular specimen.

Any good powdered soap that has the faculty of removing smoke grease and will not injure your specimens may be used for cleaning them. I want to warn you of those marcasites that show signs of any crumbling; do not put them in the soapy water as they will fall apart. Brush specimens of this nature with a stiff, dry brush. Pyrite cleans beautifully, comes out with a mirror-like shine, and shows no ill effects from the soap sudsing; but beware of too hot water, as this may cause cracking, much to the sorrow of many collectors with whom I have talked.

Change your soap solution often and make it just strong enough to

keep a good suds. Rinse your specimens in running water of the same lukewarm temperature if possible, otherwise change the rinse water as soon as you see any soap scale in the water, as this will often cling to the specimen. In general collection of minerals, over seventy-five percent can be washed in suds.

The use of W A flakes, Dreft, or any of the new detergents is recommended especially for the glassy crystals of the quartz family, calcite, topaz, etc., but I shy away from their use as they are hard on the hands, having a tendency to dry the skin and roughen it.

There are many specimens that just don't take to a bath, such as mesolite, chalcotrichite, and malachite, with their delicate fibers. These would also be injured by blowing. Alcohol will not clean them as well as the good, dependable suds, but it dries quickly and will brighten and remove some of the grime. Let me caution you here to test just a small corner or fragment of your specimen, inspect it with your glass, and then proceed with caution.

Many are of the opinion that nitric acid is the best free gold cleaner. It is fine for testing to find out if it is that lovely yellow stuff, but for cleaning, soap suds does as well or better with a thorough rinsing and either an air drying or a rubbing with a lintless cloth, if it is a smooth surface.

Native silver, pyrargyrite, and proustite have the very bad habit of turning black—and they might as well be argentite from their appearance; so a cyanide soaking is the solution. I am often queried about the amount of cyanide to use. In the first place, it is impossible to give a definite answer, as the reaction of each individual specimen varies. The size of the

specimen is the first consideration, as the specimen should be entirely submerged. Use glass or pottery, not a metal container. To an eight-ounce beaker of water, add approximately one-quarter teaspoon of chemically pure potassium cyanide crystals. If after an hour of soaking you get no results when the specimen is removed, washed in suds and rinsed, then dilute your solution by a quarter of the volume and soak again. This method has often yielded success.

I began by using the cyanide eggs, but breaking them up and dissolving them was a nuisance for the small amount of solution needed. In using the eggs, it is necessary to add more of the cyanide, as they are not chemically pure. Cyanide is very dangerous to use, as you are well aware; some people are allergic to it, as it causes a rash on the skin. The fumes are deadly and will make you sick to get just a whiff and needless to say it is a deadly poison to swallow, so do your soaking in a well ventilated room. **Caution must be observed in the use of cyanide.**

We have also had good results in cyaniding native copper and the Michigan "half breeds". They take on a rosy hue at first but this soon disappears.

When the silver and copper have had a chance to thoroughly dry, a very thin coat of metallic clear lacquer can be applied — one part lacquer to three parts thinner. After two coats of lacquer, the specimen may be washed many times before another cyanide bath will be necessary.

In the use of lacquer we have had success with realgar and orpiment specimens. Recently our case of arsenic minerals needed going over, and after the specimens were washed to remove the dirt, grease, and powdered orpiment, the bril-

liant red realgar was revealed. Two thin coats of lacquer were applied, giving them a hard surface. One Nevada specimen brought in over three years ago was so treated and it is still a distinct red and orange color.

Do not use a heavy lacquer, as it will give the specimen a painted look, which by all means should be avoided if it is to retain its natural appearance.

Oxalic acid is used by many collectors to remove the iron oxide stain found on so many specimens, but we find that soaking the same specimen in water overnight, scrubbing it with a good stiff brush, washing it with soap suds and then rinsing it will get the same results.

The use of two cover glasses cemented together with DuPont cement will enable the collector to show his small delicate crystals to their best advantage. Plastics are being widely used today, but should you at any future time want to remove the specimen, the cover glasses can be pried apart, while the plastic mount is permanent.

I would like to recommend to you Richard M. Pearl's very valuable "Mineral Collectors Handbook". The first section, which covers almost fifty pages, is on the cleaning and preservation of mineral specimens. He has gathered together a great deal of information from many sources which is invaluable to the amateur collector as it is written especially for his guidance.

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Recommended Reading

The Earth Science Digest has selected the following articles from current periodicals as recommended reading.

PHYSICAL GEOLOGY

"Concept of the Graded Stream". J. Hoover Mackin. *Bulletin of the Geological Society of America*, Vol. 59, No. 5 (May 1948), 463-512.

"Coral Reefs—A Review". Reginald A. Daly. *American Journal of Science*, Vol. 246, No. 4 (April, 1948), 193-207.

HISTORICAL GEOLOGY

"How Old Is the Oldest American?". *Science Illustrated*, Vol. 3, No. 5 (May, 1948), 42-45.

"Neandertal Man In Africa". *Science News Letter*, Vol. 53, No. 16 (April 17, 1948), 243.

"Pushing Back the History of Land Mammals in Western North America". Chester Stock. *Bulletin of the Geological Society of America*, Vol. 59, No. 4 (April 1948), 327-332.

"Recent Discoveries in the Egyptian Faiyum and Sinai". Wendell Phillips. *Science*, Vol. 107, No. 2791 (June 1948), 666-670. Paleontology, prehistoric archaeology).

"Stratigraphical Paleontology". Raymond C. Moore. *Bulletin of the Geological Society of America*, Vol. 59, No. 4 (April, 1948), 301-326.

"Time — Stratigraphic Classification of Sedimentary Rocks". Hollis D. Hedberg. *Bulletin of*

the Geological Society of America, Vol. 59, No. 5 (May 1948), 447-462.

ECONOMIC GEOLOGY

"Review of the Mineral Industries of Latin America". Sumner M. Anderson. *Economic Geology*, Vol. 43, No. 3 (May 1948), 226-231.

"Our Petroleum Resources". A. I. Levorsen. *Bulletin of the Geological Society of America*, Vol. 59, No. 4 (April, 1948), 283-300.

Chrysoprase, Cancrinite, and Labradorite Cabochons from Labrador

DESIRABLE, WELL POLISHED HIGH CABOCHONS in translucent, gemmy green chrysoprase, blue and yellow cancrinite, and chatoyant labradorite showing reddish-gold and blue color. These stones are from barren, icy Labrador. 12mm. x 18 mm. x ¼" — **\$1.75 each.**

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THE EARTH SCIENCE DIGEST TAKES GREAT PLEASURE IN
PRESENTING TO ITS READERS AN AUTHENTIC ACCOUNT BY
VANUCCIO BIRINGUCCIO OF

THE MANNER OF WORKYNGE IN GOLDE MYNES OF EGIPT
IN OWLD TYME, AFTER THE DESCRIPTION OF DIODOXUS
SICULUS, WHO WROTTE HIS HISTORIE CAULED
BIBLIOTHECA, SUMWHAT BEFORE THE DAYES
OF THEMPOROURE OCTAVIANUS
AUGUSTUS, AND BEFORE
THINCANATIO OF
CHRIST ABOWT
.XL. YEARES.

From *The Decades of the newe worlde or West India*. Translated into
Englysshe by Richarde Eden. Londini. In aedibut Guilhelmi Powell. Anno
1555.

*Gold in a
black earthe
and white
marble*

*Then damned
to the
metalles as
now to the
gallies.*

*The serier
of the vayne.*

*Golden
marble*

We have not thought good to pretermit howe golde is founde, digged, and wrought amonge the Egyp-
tians. In the confines there fore of Egipte where it bordereth with Ethiopia and Arabia, there are certeyne places frutefull of metalles, owt of the whiche, golde is digged with great laboure and expenses. For a blacke earthe of minerale mature, hath certeynes vaynes of moste white marble exceedinge bright and shyninge. The surveyours of this woorke, have assigned them a greate company of men to woorke and coyne golde. For the kinges of Egipte are accustomed to appoynte to these paynefull travailes, all suche as have byn convicte for certyne crimes and condemned by lawes, or taken prisoners in the warres, or suche as have byn committed to prison through the indignation of princes who by this meanes have bothe great vantage by theyr labours, and punyshe them sufficiently for theyr offenses. For barborous and strange souldiers of divers languagies, bare rule over them and keepe them to theyr worke, in suche force that thuse of speache beinge taken from thyem, they can not bee corrupted by love or intreatie. They drawe golde out of the hardest earth decocte with much fyer. The softest stone which is broken with meane labour, is digged with instruments of iren by the travayle of many thousands of men. The serier which decerneth the veins of the myne, goth before the workemen, appoynting them the places where they shall digge. The marble stone whiche he sheweth them, they breake and cleane with wedgies of iren by the mere strength of their bodies withowte arte. They make theyr fosse or cave, not right furthe, but as the bright nature of the golden marble leadeth them, beinge otherwyse darke and obscure by reason of

*The woorke
of chyldren*

they sundry turnes and bendings divers wayes. The labourers caryinge lyght before theyre foreheades, digge great stones owt of the myne, whyche they let faule on the ground. From this labour they never rest, inforced to continual worke with strokes and contumelious woordes. Chyldren of thage of .xii. or xiii. yeares or uppewarde, are divided into two companyes, whereof the one breake the stones into smaule pieces, and the other cary forth that which is broken. They that are past thage of .xxx. yeares receive the sayd broken stones at theyre hands and beate them in vessels of stone with maules of iren, to the quantitie of tares or fytches: which afterward they cast into many milles, where by the laboure of two or three women or owlde men to every mylle, they are grounde as smaule as meale. The fylthinesse of the bodies of these labourers, is apparent to all men. For not so much as their privie members are covered with any thinge: and theyr bodies besyde so fylthy, that no man can beholde them without compassion of theyr miserie. But no pitie, no reste, no remission is graunted them, whether they bee men or women, younge or owlde, sycke or feeble: But are all with strokes inforced to continuall labour untill the poore wretches fayne and often tymes dye for extreme debelities: In so much that many of them for feare of theyr lyfe to come (which they thynke woorke then the present payne) preferre death before lyfe. When they have thus grounde the stones very smaule, they cast that substance upon brode tables inclynynge sumwhat steepe or standynge a slope, and cast water thereon, sterynge continually the sayde poudere of marble: by the meanes whereof the earth and ure of the myne is wasshed away, and the golde as the heavier matter remayneth on the table. When they have donne thus often tymes, they overturn the golde continually with theyr hands and rub it with thynne sponges, owt of the which they presse a softe earth, and thus continewe untill the pure metall remayne lyke unto golden sande. After that this preparation is fynysshed, other woorkmen receavyng it at theyre hands by measure and weight, cast it into earthen pottes, puttyng thereto a certeyne portion of leade, with branne of barley, and weedes of the sea cauled reites or ouse. These thynges proportioned accordyngly, they close the pottes diligently with clay, and so let they stand in a furnesse with fyer for the space of fyve continuall dayes and nyghtes. In which space, all other thynges of contrary mixture beinge consumed, only the golde is found in the vessels, sumwhat dimin-

Mylles.

*The misery
of the miners*

*The
Purgeinge
of the metall
from the ure.*

*The
melting
of gold.*

ysshed of the fyrst weyght. And by this labour and diligence is gold possessed in the furthest parte of Egypt. Whereby even nature her selfe teacheth us howe laborious it is in fyndynge, tedious in pursuinge, daungerous in keepynge, and in use constitute betwene pleasure and sorrowe.

Picture Agates

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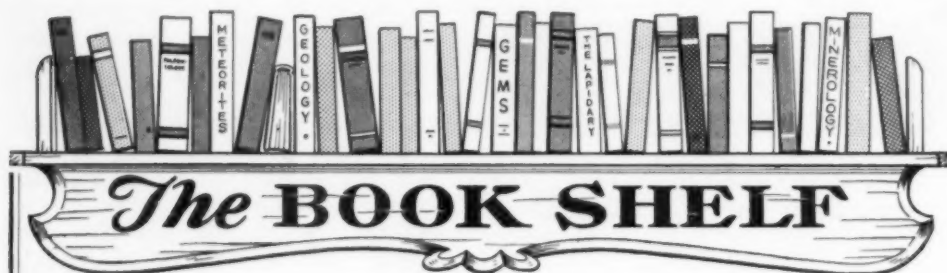
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